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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,879	03/31/2004	Michael E. Yoder	200314963-1	5745

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INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER

SPIELER, WILLIAM

ART UNIT	PAPER NUMBER
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4141

NOTIFICATION DATE	DELIVERY MODE
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01/04/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/813,879	Applicant(s) YODER ET AL.	
	Examiner William Spieler	Art Unit 4141	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/31/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1-24 are pending for examination.

Information Disclosure Statement

The IDS filed on March 31, 2004 is accepted.

Drawings

The drawings filed on March 31, 2004 are accepted.

Specification

1. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

2. The abstract of the disclosure is objected to because it does not include the technical disclosure of the improvement over the previous method of process deactivation. Correction is required. See MPEP § 608.01(b).

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3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

4. The abstract of the disclosure is objected to because it states, "One embodiment disclosed relates to. . .", a close analogue of the phrases to be avoided which are listed above. Correction is required. See MPEP § 608.01(b).

5. The disclosure is objected to because of the following informalities: There is a sentence fragment in the disclosure, Page 5, lines 7-8; there is a sentence fragment in the disclosure that is unintelligible, Page 5, lines 13-14.

Appropriate correction is required.

Claim Rejections - 35 U.S.C. § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. § 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 10-12 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which

was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification does not describe any method by which one of skill in the art could use to make a further determination if the process is still deactivatable after having taken the steps described in the prior claims, nor does it provide any reason to think that any further determination remains to be taken.

Claim Rejections - 35 U.S.C. § 103

8. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1, 23 and 24 are rejected under 35 U.S.C. § 103 (a) as being unpatentable over Kawahara et al., U.S. Patent No. 6,910,209 (hereinafter "Kawahara").

As per claim 1, Kawahara discloses:

a method of *terminating* a process by a computer operating system (Col. 1, lines 11-15; Col. 5, lines 16-18), the method comprising:

initiating a process-wide *termination* operation (Col. 2, lines 43-44; Col. 5, lines 16-18);

determining whether threads of the process are currently *terminable* (Col. 7, lines 11-14; Col. 5, lines 16-18); and

moving the threads of the process that are currently *terminable* to a stopped state (Col. 6, lines 45-47; Col. 5, lines 16-18);

wherein the process-wide deactivation operation is called by outstanding threads of the process when the outstanding threads re-enter a kernel of the operating system (Col. 5, lines 8-9; Col. 5, lines 16-18).

Kawahara teaches terminating a process, not suspending a thread. It would have been obvious to one of ordinary skill in the art that this method can be adapted from terminating a process to merely suspending it would have been obvious to one of ordinary skill in the art to take advantage of the identified method in Kawahara so that “the data structures in the system are not left in an inconsistent state and the overall system status is not damaged.” (Col. 2, lines 33-35).

Claims 23 and 24 are system claims corresponding to the method claim 1, and are rejected under the same reasons set forth for claim 1 above.

10. Claim 2 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawahara et al., U.S. Patent No. 6,910,209 (hereinafter “Kawahara”) in view of Toutonghi et al., U.S. Patent No. 5,842,016 (hereinafter “Toutonghi”) and Nemirovsky et al., U.S. Patent No. 7,020,879 (hereinafter “Nemirovsky”).

As per claim 2, the rejection of claim 1 is hereby incorporated, and further Kawahara does not disclose a thread being suspendable if the thread is stopped. Toutonghi teaches that a thread that is suspendable is one that is “at a stable point”. (Col. 16, lines 14-17). Nemirovsky teaches that a thread that is not executing is at a stable point (Col. 18, lines 11-14). It would have been obvious to one of ordinary skill in

the art at the time of invention was made to incorporate the teaching of Toutonghi and Nemirovsky into Kawahara that a thread that is stopped may be safely suspended as a stopped thread is necessarily not executing by definition, and is therefore , and this furthers the purpose of Kawahara that “the data structures in the system are not left in an inconsistent state and the overall system status is not damaged.” (Col. 2, lines 33-35).

11. Claim 3 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawahara et al., U.S. Patent No. 6,910,209 (hereinafter “Kawahara”) in view of Toutonghi et al., U.S. Patent No. 5,842,016 (hereinafter “Toutonghi”), Nemirovsky et al., U.S. Patent No. 7,020,879 (hereinafter “Nemirovsky”), and Hogle et al., U.S. Patent No. 6,560,626 (hereinafter “Hogle”).

As per claim 3, the rejection of claim 2 is hereby incorporated, and further Kawahara does not disclose a thread being suspendable if the thread is sleeping interruptibly. Toutonghi teaches that a thread that is suspendable is one that is “at a stable point”. (Col. 16, lines 14-17). Nemirovsky teaches that a thread that is not executing is at a stable point (Col. 18, lines 11-14). Hogle teaches that a thread that is interruptibly sleeping is not executing. (Col. 1, lines 46-50). It would have been obvious to one of ordinary skill in the art at the time of invention was made to incorporate the teaching of Toutonghi, Nemirovsky and Hogle into Kawahara to determine that a interruptibly sleeping thread is suspendable because it is in a stable state, and this furthers the purpose of Kawahara that “the data structures in the system are not left in

an inconsistent state and the overall system status is not damaged.” (Col. 2, lines 33-35).

12. Claim 4 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawahara et al., U.S. Patent No. 6,910,209 (hereinafter “Kawahara”) in view of Toutonghi et al., U.S. Patent No. 5,842,016 (hereinafter “Toutonghi”), Nemirovsky et al., U.S. Patent No. 7,020,879 (hereinafter “Nemirovsky”), Hogle et al., U.S. Patent No. 6,560,626 (hereinafter “Hogle”) and Hsieh, U.S. Patent No. 7,210,146 (hereinafter “Hsieh”).

As per claim 4, the rejection of claim 3 is hereby incorporated, and further Kawahara does not disclose a thread being suspendable if the thread is interruptible and not currently running nor does it teach removing the thread from a run queue prior to moving the thread to the stopped state. Toutonghi teaches that a thread that is suspendable is one that is “at a stable point”. (Col. 16, lines 14-17). Nemirovsky teaches that a thread that is not executing is at a stable point (Col. 18, lines 11-14). Hsieh teaches that an interruptible thread can be put to sleep (Col. 4, lines 53-55), that such a state is “non-executing” (Col. 1, lines 48-50), and that putting a thread to sleep can be accomplished by removing it from the run queue (Col. 1, lines 58-60; col. 2, lines 30-32). It would have been obvious to one of ordinary skill in the art to determine that an interruptible thread that is not currently running is suspendable because putting it to sleep, which is taught in the prior art, places it in a stable state, and this furthers the purpose of Kawahara that “the data structures in the system are not left in an inconsistent state and the overall system status is not damaged.” (Col. 2, lines 33-35).

13. Claim 5 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawahara et al., U.S. Patent No. 6,910,209 (hereinafter "Kawahara") in view of Mounes-Toussi et al., U.S. Patent No. 6,269,425 (hereinafter "Mounes-Toussi").

As per claim 5, the rejection of claim 1 is hereby incorporated, and further Kawahara does not disclose determining whether threads of the process are sleeping on memory nor does it disclose counting the number of threads that are sleeping on memory. The analogous art of Mounes-Toussi, however, does. (Col. 3, lines 50-52). It would have been obvious to one of ordinary skill in the art to apply this analogous art as keeping track of the number of threads sleeping on memory is of obvious utility in a memory management system.

14. Claims 6-8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawahara et al., U.S. Patent No. 6,910,209 (hereinafter "Kawahara") in view of Mounes-Toussi et al., U.S. Patent No. 6,269,425 (hereinafter "Mounes-Toussi") and Long et al., U.S. Patent No. 7,086,053 (hereinafter "Long").

As per claim 6, the rejection of claim 5 is hereby incorporated, and further neither Kawahara nor Mounes-Toussi disclose calculating a sum of a number of threads in the stopped state and the number of threads sleeping on memory. Having stopped suspendable threads, it would be obvious to one of ordinary skill in the art that both stopped threads and memory sleepers cannot execute or otherwise use any resources of the computer while remaining in their current state. The analogous art of Long teaches that one can determine a number of threads that are in an "unsafe" condition. (Col. 8, lines 23-25). It would have been obvious to one of ordinary skill in the art that

one could alternatively count the number of threads that are in a safe condition – that is, the sum of those threads that are stopped as a result of having been determined to be suspendable and those threads that are memory sleepers.

As per claim 7, the rejection of claim 6 is hereby incorporated, and further neither Kawahara nor Mounes-Toussi disclose determining if the sum of the number of memory sleepers and the number of stopped threads. The analogous art of Long, however, teaches that a determination can be made if there are any unsafe threads by comparing the number of unsafe threads to zero. (Col. 8, lines 27-28). It would have been obvious to one of ordinary skill in the art that determining whether the number of unsafe threads is zero is functionally equivalent to determining if the number of safe threads is equal to the number of threads.

As per claim 8, the rejection of claim 7 is hereby incorporated, and further neither Kawahara nor Mounes-Toussi disclose returning and indicating self-deactivation pending if the sum is unequal to the number of live threads. The analogous art of Long, however, teaches that if all the threads are not safe, deactivation cannot continue. (Col. 8, lines 35-39). It would have been obvious to one of ordinary skill in the art that deactivating a process when it is known that it is unsafe to do so would be something to be avoided.

15. Claims 9-12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawahara et al., U.S. Patent No. 6,910,209 (hereinafter “Kawahara”) in view of Mounes-Toussi et al., U.S. Patent No. 6,269,425 (hereinafter “Mounes-Toussi”), Toutonghi et al., U.S. Patent No. 5,842,016 (hereinafter “Toutonghi”), and Long et al., U.S. Patent No.

7,086,053 (hereinafter “Long”).

As per claim 9, the rejection of claim 7 is hereby incorporated, and further Kawahara teaches moving the threads of the process that are suspendable to a stopped state. (Col. 6, lines 45-47; Col. 5, lines 16-18). Neither Mounes-Toussi nor Kawahara, however, teach that memory sleepers are suspendable if the sum of memory sleepers and suspendable threads is equal to the number of live threads. Toutonghi teaches that a thread that is suspendable is one that is “at a stable point”. (Col. 16, lines 14-17). Long teaches that threads of a process are at a consistent, safe point if there are no unsafe threads. (Col. 8, lines 26-33). It would have been obvious to one of ordinary skill in the art that the method described in Long would be an effective means to determine whether the process is in a state such that suspending the process as a whole to memory would be safe.

As per claim 10, the rejection of claim 9 is hereby incorporated, and further Long teaches a method of determining whether a process is deactivatable, namely, whether or not there are any unsafe or inconsistent threads. (Col. 8, lines 26-33). It would have been obvious to one of ordinary skill in the art that actually determining if the process is deactivatable is a necessary step before deactivating the process if one wishes to further the purpose of Kawahara that “the data structures in the system are not left in an inconsistent state and the overall system status is not damaged.” (Col. 2, lines 33-35).

As per claim 11, the rejection of claim 10 is hereby incorporated, and further Kawahara teaches that a flag may be set to signal the completion of the process. (Abstract). It would have been obvious to one of ordinary skill in the art at the time of

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the invention that such a flag would be of utility in a process deactivation operation so as to communicate the process's suspension to the kernel. It would further have been obvious to one of ordinary skill in the art at the time of the invention that setting a flag, which has a Boolean value, is equivalent to turning off a flag signifying the opposite event, i.e. setting a PROCESS_SUSPENDED flag as opposed to turning off a PROCESS_NOT_SUSPENDED flag.

As per claim 12, the rejection of claim 10 is hereby incorporated, and further Kawahara teaches that an unterminable thread cannot be terminated. (Col. 7, lines 4-10). It would have been obvious to one of ordinary skill in the art that if the process deactivation encounters a thread of the process which, if deactivated, would leave in the system in an unsafe or unstable state, and, as such, if the process is not deactivatable, the process-wide deactivation operation must fail. As the process cannot deactivate, the prior steps involving moving threads to the stopped state, i.e. suspending them, it would have been obvious to one of ordinary skill in the art to un-suspend them so as to leave the process in the same state that it was in prior to the initialization of the process-wide deactivation procedure.

16. Claim 13 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawahara et al., U.S. Patent No. 6,910,209 (hereinafter "Kawahara") in view of Rogers et al., U.S. Patent No. 5,557,747 (hereinafter "Rogers").

As per claim 13, the rejection of claim 1 is hereby incorporated, and further Kawahara does not teach not analyzing zombie threads. The analogous art of Rogers teaches that a zombie thread is one that "has been terminated." (Col. 10, lines 52-53).

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It would have been obvious to one of ordinary skill in the art that a terminated thread would not affect whether or not the process to be deactivated, and therefore could safely be ignored and not analyzed.

17. Claim 14 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawahara et al., U.S. Patent No. 6,910,209 (hereinafter “Kawahara”) in view of Davy, U.S. Patent No. 5,517,643 (hereinafter “Davy”).

As per claim 14, the rejection of claim 1 is hereby incorporated, and further Kawahara does not teach deactivating a process using a memory swapper of an operating system. The analogous art Davy, however, teaches the use of a “SWAPPER” that acts to free memory by swapping out pages. (Col. 4, lines 10-15). It would have been obvious to one of ordinary skill in the art to have the memory swapper implement the method described in the application, as the memory swapper described in Davy is designed to free memory.

18. Claims 15, 16 and 21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawahara et al., U.S. Patent No. 6,910,209 (hereinafter “Kawahara”) in view of Farrell et al., U.S. Patent No. 5,247,675 (hereinafter “Farrell”).

As per claim 15, the rejection of claim 1 is hereby incorporated, and further Kawahara does not teach compelling a thread re-entering the kernel to enter the process deactivation operation. The analogous art of Farrell, however, shows that the operating system may force threads to undertake certain actions. (Col. 10, lines 22-24; Col. 10, lines 49-63). It would have been obvious to one of ordinary skill in the art to apply the teaching of Farrell because of the benefit of having a managed process

deactivation system.

As per claim 16, the rejection of claim 15 is hereby incorporated, and further Farrell teaches the re-entered thread removing itself from its process. (Col. 10, lines 37-40). It would therefore have been obvious to one of ordinary skill in the art that a re-entering thread could manage its own running state, and move itself to the stopped state if it were compelled to enter the kernel by virtue of a process-wide deactivation operation.

As per claim 21, the rejection of claim 1 is hereby incorporated, and further Farrell teaches that threads communicate with the kernel. (Col. 10, lines 26-28). It would have been obvious to one of ordinary skill in the art that a thread going to sleep would communicate with the kernel that information, and that this information would include whether the process is being deactivated such that the thread should not be woken up until the operating system determines that the process is to be unsuspended.

19. Claims 17, 19 and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawahara et al., U.S. Patent No. 6,910,209 (hereinafter “Kawahara”) in view of Farrell et al., U.S. Patent No. 5,247,675 (hereinafter “Farrell”), Mounes-Toussi et al., U.S. Patent No. 6,269,425 (hereinafter “Mounes-Toussi”) and Long et al., U.S. Patent No. 7,086,053 (hereinafter “Long”).

As per claim 17, the rejection of claim 16 is hereby incorporated, and further neither Kawahara nor Farrell disclose counting the number of threads that are sleeping on memory. The analogous art of Mounes-Toussi, however, does. (Col. 3, lines 50-52). It would have been obvious to one of ordinary skill in the art to apply this analogous

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art as keeping track of the number of threads sleeping on memory is of obvious utility in a memory management system. As well, neither Kawahara, Farrell nor Mounes-Toussi disclose calculating a sum of a number of threads in the stopped state and the number of threads sleeping on memory. The analogous art of Long teaches that one can determine a number of threads that are in an “unsafe” condition. (Col. 8, lines 23-25). Having stopped suspendable threads, it would be obvious to one of ordinary skill in the art that both stopped threads and memory sleepers cannot execute or otherwise use any resources of the computer while remaining in their current state. It would have been obvious to one of ordinary skill in the art that one could alternatively count the number of threads that are in a safe condition – that is, the sum of those threads that are stopped as a result of having been determined to be suspendable and those threads that are memory sleepers. As well, neither Kawahara, Farrell nor Mounes-Toussi disclose determining if the sum of the number of memory sleepers and the number of stopped threads. The analogous art of Long, however, teaches that a determination can be made if there are any unsafe threads by comparing the number of unsafe threads to zero. (Col. 8, lines 27-28). It would have been obvious to one of ordinary skill in the art that determining whether the number of unsafe threads is zero is functionally equivalent to determining if the number of safe threads is equal to the number of threads.

As per claim 19, the rejection of claim 17 is hereby incorporated, and further Long teaches a method of determining whether a process is deactivatable, namely, whether or not there are any unsafe or inconsistent threads. (Col. 8, lines 26-33). It

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would have been obvious to one of ordinary skill in the art that actually determining if the process is deactivatable is a necessary step before deactivating the process, and further that if the process is not deactivatable, then those steps that were undertaken in furtherance of deactivating the process ought to be undone.

As per claim 20, the rejection of claim 17 is hereby incorporated, and further Long teaches a method of determining whether a process is deactivatable, namely, whether or not there are any unsafe or inconsistent threads. (Col. 8, lines 26-33). It would have been obvious to one of ordinary skill in the art that if the process is determined to be deactivatable and all threads of the process are suspended, stopped or sleeping, then the process is completed.

20. Claim 18 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawahara et al., U.S. Patent No. 6,910,209 (hereinafter "Kawahara") in view of Farrell et al., U.S. Patent No. 5,247,675 (hereinafter "Farrell"), Mounes-Toussi et al., U.S. Patent No. 6,269,425 (hereinafter "Mounes-Toussi"), Long et al., U.S. Patent No. 7,086,053 (hereinafter "Long") and Klemm et al., U.S. Patent No. 7,243,267 (hereinafter "Klemm").

As per claim 18, the rejection of claim 17 is hereby incorporated, and further neither Kawahara, Farrell, Mounes-Toussi nor Long teach un-suspending threads of the process and ending the process-wide deactivation operation if a kill command has been received. Klemm teaches that a kill command is used to signal to the operating system that a particular process is to be forcibly terminated. (Col. 2, lines 57-59). It would have been obvious to one of ordinary skill in the art that the reception of the kill signal would

indicate that the process was to be terminated, and that unsuspending the threads of the process would permit the termination and later reacquisition of the allocated memory of the threads, and also that allowing the threads to remain in a suspended state would only delay this eventual step.

21. Claim 22 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kawahara et al., U.S. Patent No. 6,910,209 (hereinafter "Kawahara") in view of Davy, U.S. Patent No. 5,517,643 (hereinafter "Davy") and Cawley, U.S. Patent No. 5,361,334 (hereinafter "Cawley").

As per claim 22, the rejection of claim 1 is hereby incorporated, and further Kawahara does not teach reactivating a deactivated process by a procedure that includes bringing in associated memory regions, turning on a flag, and un-suspending threads of the process. The analogous art Davy, however, teaches that reactivating a process will generate so-called "hard faults." (Col. 4, lines 48-50). These hard faults are generated when the associated memory regions are being brought in when the threads of the process attempt to execute after having been un-suspended. Cawley further teaches the use of flags to indicate that a process is runnable. (Col. 5, lines 5-8). It would have been obvious to one of ordinary skill in the art that a thread whose pages were swapped to secondary storage would necessarily hard fault upon its execution, bringing in associated memory regions, while a flag can be set to indicate that the process is runnable, which would assist in process management.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM SPIELER whose telephone number is (571)270-3883. The examiner can normally be reached on Monday to Thursday, 9:30 AM - 3:00 PM Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chameli Das can be reached on (571) 270-1392. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

William Spieler
Patent Examiner
AU 4141
December 10, 2007

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